

## PATENT SPECIFICATION



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### PROVISIONAL SPECIFICATION.

No. 18,289, A.D. 1932.

### Compositions particularly suitable for use as Shampoos or for Washing Purposes,

I, ROBERT HENRY MARRIOTT, M.Sc. (Leeds), A.I.C., of 31, Upland Road, Sutton, in the County of Surrey, England, a British Subject, do hereby declare the nature of this invention to be as follows:—

This invention relates to a composition of matter which is particularly suitable for use as a shampoo or for washing materials such as glass, china, metal or the like.

The composition of matter of this invention comprises a sulphonated alcohol and a colloidal clay for example bentonite or the like.

It is preferred to employ a mixture of a salt of sulphonated lauryl alcohol, for example, the sodium salt and bentonite.

The ratio of bentonite or other colloidal clay to sulphonated material may be as high as 1:1 or even higher.

When the compositions of matter according to the invention are to be used as shampoos they should have a  $p_H$  value of approximately 7 since there is then no chemical effect on the cystine groupings of the keratin and no effect on the molecular configuration. This absence of chemical action prevents alteration of the major physical properties of the hair which, therefore, does not become frizzy and is in consequence easier to wave and set. For the same reason the compositions do not injure permanent waves.

It will thus be appreciated that no alkaline additions such as sodium carbonate should be made to the compositions except in such small amounts as will merely react with the calcium or magnesium hardness of the water.

The presence of the bentonite or other colloidal clay or other silicate or colloidal silica imparts to the hair a fullness which is not obtained if these materials are absent.

It is unnecessary to add to the compositions the scenting materials which are usually employed to mask the odour of

shampoos containing soap with or without soda.

The use of compositions having  $p_H$  values of about 7 also has the further advantage of rendering them very efficacious in treating dandruff, since at this  $p_H$  value there is no unnatural dryness of the scalp which tends to produce subsequent irritation and excessive production of dandruff. It will be appreciated that the efficacy of the treatment will depend upon the absence of disease or physiological abnormality of the skin.

The compositions of matter of this invention may, as stated hereinbefore, be employed for washing materials such as glass, china, metal or the like. Thus, for example, the compositions rapidly remove grease and dirt even although the water in which the materials are being washed is already contaminated with grease and dirt and when the materials are wiped they dry rapidly and are cleaner than if clean water and soap had been used.

Furthermore the compositions have the advantage that they do not render the materials under treatment slippery as do soaps or other alkaline detergents.

Alkalis should not be present in any quantity sufficient to make the  $p_H$  value greater than about 9 because the non-slippery properties are lost at  $p_H$  values greater than about 9.

The aforesaid properties render the compositions of the invention eminently suitable for domestic use. Furthermore they can be employed for removing lime soaps from baths without the use of abrasives and for scouring containers without causing scratches on the surface thereof.

Diluents such as water may be added if desired and other additions may also be made. Thus, for example, when the compositions of matter prepared according to the invention are to be used as shampoos it is advantageous to add substances such as menthol which give a cooling effect.

The compositions of this invention have the further advantage of being cheaper than the sulphonated bodies alone.

Dated this 29th day of June, 1932.

ROBERT H. MARRIOTT.

# PROVISIONAL SPECIFICATION.

No. 19,852, A.D. 1932.

## Compositions suitable for use in the Washing of Textile Materials or for other Washing Purposes.

I, ROBERT HENRY MARRIOTT, M.Sc. (Leeds) A.I.C., of 31, Upland Road, Sutton, in the County of Surrey, England, a British Subject, do hereby declare the nature of this invention to be as follows:—

This invention relates to a composition of matter which is particularly suitable for washing fibrous materials or articles of clothing made of wool, silk, cotton, linen, artificial silk and the like or washing skin.

The composition of matter of this invention comprises a so-called sulphonated alcohol, and a colloidal clay for example bentonite or the like. In special cases additions of mild alkalis such as borax, di-sodium hydrogen phosphate or other phosphates or sodium carbonate or bicarbonate or the like or mixtures thereof may be made.

It is preferred to employ a mixture of a salt of the sulphonated fatty alcohols such as the sodium salt of sulphonated lauryl alcohol or the sodium salt of sulphonated oleyl alcohol and bentonite.

The amounts of bentonite or other colloidal clay added to the sulphonated material can be varied over a fairly wide range, but generally speaking 2 to 4 parts of bentonite to 1 of sulphonated material are suitable.

In preparing these mixtures it must be borne in mind that unless the concentration of sulphonated material is greater than about 0.2 per cent. when the mixture is dissolved in water even large amounts of bentonite have little or no effect. At concentrations of sulphonated material above this, increasing amounts of colloidal clay increase the detergent and emulsifying action. Thus a 0.25 per cent. solution of sulphonated alcohol fails to form a stable emulsion with oil but when an addition of bentonite is made so that it is at a concentration of 1 per cent. the emulsion is just stable and the detergent power of the sulphonated alcohol is correspondingly increased. An excellent washing mixture may be made by mixing 3 ozs. of the sodium salt of sulphonated lauryl alcohol

with 6 ozs. of bentonite and dissolving in 8 gallons of warm water.

Owing to the buffered alkalinity of bentonite and similar materials it is usually unnecessary to make additions of alkalis since compositions of matter covered in this invention will generally have a  $p_H$  value of about 9.0 to 8.5. Where it be desired to modify this alkalinity additions of mild alkaline buffers may be made such as borax, sodium bicarbonate or carbonate or mixtures thereof or di-sodium hydrogen phosphate or other phosphates or mixtures thereof or small additions of weak acids such as acetic acid may be made if it be desired to lower the  $p_H$  value. It must be understood that these mixtures have excellent detergent properties in dilute acid solution but care has to be taken that the solution is not so acid as to lead to flocculation of the colloidal materials.

It has been found that these mixtures possess an enhanced lathering and foaming power and are better detergents than either the sulphonated materials alone or in admixture with either acids, alkalis or salts and that the compositions of matter of this invention give to the materials washed therein a full feel and a soft handle. In the case of those fabrics which are subsequently ironed, it will be found that they possess a more pleasing glossy surface and a finer texture than materials washed in other ways. In addition the iron slides over the surface better with the result that the ironing operation is easier, safer and quicker.

These mixtures do not cause the hands to become wrinkled and rough. In fact the presence of the colloidal clay imparts to the hands a soft and silky feel and the hands may be immersed in such washing mixtures for long periods without becoming sore and tender.

The excellent detergent powers of these mixtures combined with their beneficial effect on the skin makes them of particular use in cleaning the skin and they are very efficacious in removing dirty grease from the hands. The colloidal

clay not only improves the detergent action and the lathering power but also acts as a smooth matrix giving "substance" to the lather and stabilising the emulsion of grease and leaves the skin soft and smooth.

The mixtures of sulphonated material and colloidal clay can be, if desired, moulded into tablets or bars and can then be used in a way similar to ordinary soap.

Colouring and scenting materials can be added as desired.

The above mixtures possess of course all the advantageous properties of the sulphonated constituents, e.g. they do not form insoluble calcium or magnesium soaps in the ordinary water used for washing purposes.

Dated this 13th day of July, 1932.

ROBERT H. MARRIOTT.

#### COMPLETE SPECIFICATION.

#### Compositions suitable for use in the Washing of Textile Materials or for other Washing Purposes.

I, ROBERT HENRY MARRIOTT, D.Sc., A.I.C., of 31, Upland Road, Sutton, in the County of Surrey, a British Subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to compositions which are suitable for use as a shampoo or hair wash, for washing fibrous materials or articles of clothing made of wool, silk, cotton, linen, artificial silk and the like, or for washing materials such as glass, china, metal or the like.

The compositions of this invention comprise so-called sulphonated alcohols or alkali salts thereof and a colloidal clay known as bentonite or varieties of this clay such as is known under the registered Trade Mark "Wilkinite", that is clays which have a micaceous habit with facile cleavage and a felt like texture and which give thixotropic paste with water.

In some cases, additions of an alkaline material such as borax, di-sodium hydrogen phosphate or other phosphates or sodium carbonate or bicarbonate or the like or mixtures thereof may be made.

It is preferable to employ as the composition a salt of a sulphonated fatty alcohol such as the sodium salt of sulphonated lauryl alcohol or the sodium salt of sulphonated oleyl or octadecenyl alcohol and bentonite.

It should be understood that the so-called colloidal clays known as bentonite and "Wilkinite" are special clays which occur naturally in various parts of the world, e.g. Canada and the United States, and such special clays only are included in this invention. The said clays must not be confused with clays such as Fuller's earth, china clay or kaolin, nor with materials such as finely powdered pumice, kieselguhr, terra cotta or the like, which substances do not function in

the same way as does bentonite and are quite unsuitable for the purposes of this invention. The substance bentonite is deemed, for the purpose of this invention, to include the synthetic material as well as that which is found in nature.

The term sulphonated fatty alcohol comprises the products such as are obtained by the action of sulphuric acid or chlorosulphonic acid or fuming sulphuric acid on the fatty alcohols containing 6 or more carbon atoms, and the term sulphonated lauryl alcohol designates a mixture of sulphonated alcohols of which the major proportion is sulphonated lauryl alcohol ( $C_{12}H_{25}OH$ ) although other bodies may be present such as sulphonated alcohols containing between 6 carbon atoms and 18 carbon atoms per molecule as is found, for example, in such commercial preparations known as "Sulphonated Loral". Similarly, sulphonated oleyl alcohol is comprised chiefly of the unsaturated alcohol derived from oleic acid, and is typified by various commercial preparations, for example, that known under the registered Trade Mark "Sulphonated Ocenol".

The amounts of bentonite added to the sulphonated material can be varied over a fairly wide range, but generally speaking, 1 to 5 parts of bentonite to 1 of sulphonated alcohol are suitable.

It has been found that a satisfactory shampoo or hair wash composition may be made by mixing 3 parts of bentonite, 1 part of commercial sodium salt of sulphonated lauryl alcohol, and 1 part of sodium bicarbonate, the parts being by weight.  $\frac{1}{2}$  oz. of the above composition to be dissolved in 10 ozs., approximately, of water.

Another shampoo or hair wash composition may be made by mixing 1 part of bentonite and 1 part of commercial sodium salt of sulphonated lauryl alcohol, the parts being by weight.  $\frac{1}{2}$  oz. of the

above composition to be dissolved in approximately 6 ozs of water.

When the compositions of this invention are used as shampoos or hair washes, they prevent the hair becoming frizzy and thus make it easier to wave or set. The Bentonite augments the lather, increases the detergent power and imparts a full and pleasant feel. The action of the shampoo is such that permanent waves are not affected by it. The constituents further do not react to form sticky insoluble "lime" soaps with hard water which would be formed if soap were present in the mixture. This results in a perfect cleansing of the hair and scalp and, owing to the low  $p_H$  value and the emollient properties of the mixture, there is no subsequent irritation of the scalp.

It should be understood that no additions of strong alkaline materials such as sodium carbonate should be made to the compositions when used as shampoos or hair washes.

It is unnecessary to add to the compositions the scenting materials which are often employed to mask the odour of shampoos containing soap, although scenting materials may be added if desired. Other additions, such as for instance, menthol, which give a cooling effect may be made.

A suitable composition for washing textile materials may be made by mixing 3 ozs. of the sodium salt of sulphonated lauryl alcohol with 6 ozs. of bentonite and dissolving in 3 gallons of warm water.

For purposes other than for shampoos or hair washes, it is usually unnecessary to make additions of alkaline materials since the compositions of this invention will in general have a  $p_H$  value which lies between 8.0 and 10.0. Where it be desired to modify this alkalinity, additions of an alkaline material may be made such as borax, sodium bicarbonate or carbonate or mixtures thereof or di-sodium hydrogen phosphate or other phosphates or mixtures thereof or small additions of weak acids such as boric acid or acetic acid may be made if it be desired to lower the  $p_H$  value. Generally speaking, it will be found that satisfactory detergent powers are obtained at  $p_H$  8 or thereabouts a value which is easily obtained by the addition of sodium bicarbonate, even though the bentonite itself when suspended in water has a  $p_H$  value of 9.0 or more. Where the fabrics to be washed are stained and it is necessary to increase the alkalinity of the composition, strongly alkaline materials such as sodium carbonate may be added. For, example, in washing fabrics stained with tea, a composition

consisting of 5 parts of bentonite, 1 part of sodium salt of sulphonated lauryl alcohol and 1 part of sodium carbonate (crystals) may be used, the parts being by weight.

It has been found that the above compositions possess an enhanced lathering and foaming power and are better detergents than the sulphonated alcohols either alone or in admixture with either acids, alkalies or salts and that the use of the compositions of this invention give to fabrics washed therewith a full feel and a soft handle. In the case of those fabrics which are subsequently ironed, it will be found that they possess a more pleasing glossy surface and a finer texture than fabrics washed in other ways. In addition the iron slides over the surface better with the result that the ironing operation is easier, safer and quicker.

A suitable composition for washing materials such as glass, china, metal or the like may be made by mixing 4 parts of bentonite, 3 parts of the sodium salt of sulphonated lauryl alcohol and 3 parts of sodium bicarbonate, the parts being by weight.

Such compositions rapidly remove grease and dirt even although the water be cold, and glass can be washed efficiently in the same water as materials contaminated with grease and odorous substances. In wiping the materials washed with the above mixture, it will be found that they dry rapidly and are cleaner than if clean water and soap had been used.

Furthermore, the compositions have the advantage that they do not render the materials under treatment slippery as do soaps or other alkaline detergents.

Alkaline substances should not be present in any quantity sufficient to cause the mixture to lose its non-slippery properties.

The aforesaid properties render the compositions of the invention eminently suitable for domestic use. Thus they can be employed for removing lime soaps from bathtubs without the use of abrasives such as powdered pumice and kieselguhr and also for scouring containers without causing scratches on the surface thereof.

In preparing the compositions of this invention it should be borne in mind that unless the concentration of sulphonated alcohol is greater than 0.07 per cent. when the mixture is dissolved in water, even large amounts of bentonite may have little effect. At concentrations of sulphonated alcohol above this amount, increasing amounts of the colloidal clay increase the detergent and emulsifying action. Thus at  $p_H$  8.5 a 0.25 per cent.

solution of sulphonated alcohol fails to form a stable emulsion with oil but when an addition of bentonite is made so that it is at a concentration of 1 per cent. the emulsion is just stable and the detergent power of the sulphonated alcohol is correspondingly increased.

Those compositions given above in which the  $p_H$  value does not exceed 8.5 do not cause the hands to become wrinkled and rough. In fact the presence of the bentonite imparts to the hands a soft and silky feel and the hands may be immersed in such washing mixtures for considerable periods of time without becoming sore and tender.

The excellent detergent powers of compositions of this invention combined with their beneficial effect on the skin make them of particular use in cleaning the skin and they are very efficacious in removing dirty grease from the hands. The bentonite not only improves the detergent action and the lathering power but also acts as a smooth matrix giving "substance" to the lather and stabilizing the emulsion of grease and leaves the skin soft and smooth. The bentonite does not, however, function as an abrasive material such as powdered pumice or kieselguhr.

The compositions of sulphonated alcohol and colloidal clay can be, if desired, moulded into tablets or bars and can then be used in a way similar to ordinary soap. They can also be made up as pastes with suitable emollients. Colouring and scenting materials can be added as desired.

If desired the compositions can be mixed with water and/or glycerine, and the compositions admixed with water and/or glycerine are included in this invention.

The mixtures of the invention possess the advantageous properties that they do not form insoluble calcium or magnesium soaps with the ordinary water used for washing purposes, and, in addition, possess, by virtue of the properties of the bentonite, marked water softening powers.

Having now particularly described and ascertained the nature of my said inven-

tion, and in what manner the same is to be performed, I declare that what I claim is:—

1. Compositions suitable for use in the washing of textile materials or for other washing purposes, comprising a so-called sulphonated alcohol or an alkali salt thereof and a colloidal clay known as bentonite or a variety of this clay such as is known under the registered Trade Mark "Wilkinsonite".

2. Compositions suitable for use in the washing of textile materials or for other washing purposes, comprising a so-called sulphonated alcohol or an alkali salt thereof, a colloidal clay known as bentonite or a variety of this clay such as is known under the registered Trade Mark "Wilkinsonite" with the addition of an alkaline material such as borax, disodium hydrogen phosphate, or other phosphates or sodium carbonate or bicarbonate or the like or mixtures thereof.

3. Compositions suitable for use in the washing of textile materials or other washing purposes, as claimed in claim 1 or claim 2, characterized in that one part of sulphonated alcohol or an alkali salt thereof is mixed with 1 to 5 parts of bentonite.

4. Compositions suitable for use in the washing of textile materials or other washing purposes, as claimed in any one of the preceding claims, wherein the sodium salt of sulphonated lauryl alcohol or the sodium salt of sulphonated oleyl or octodecenyl alcohol is employed.

5. Compositions for use as shampoos or hair washes substantially as described.

6. Compositions for use in the washing of textile materials substantially as described.

7. Compositions for use in the washing of materials such as glass, china, metal or the like substantially as described.

8. Compositions as claimed in any of the preceding claims, admixed with water and/or glycerine.

Dated the 17th day of February, 1933.  
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